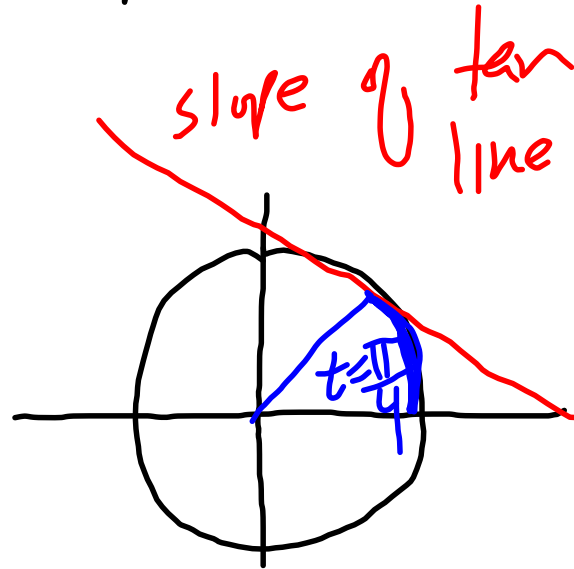


3.6 b chain rule for parametric equations

parametric equations

ex $x(t) = \cos t$
 $y(t) = \sin t$



t is a parameter

$$\text{slope} = \left| \frac{dy}{dx} = \frac{dy/dt}{dx/dt} \right|$$

chain rule for parametric eqns.

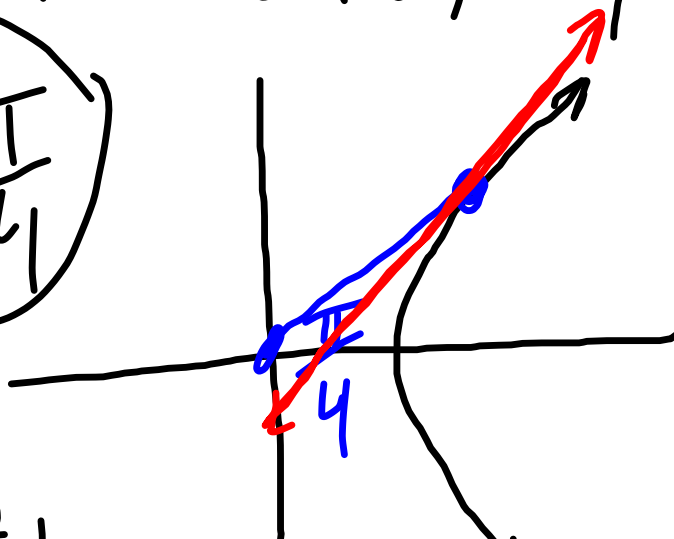
$$\frac{dy}{dx} = \frac{\cos t}{-\sin t}$$

$$\left. \frac{dy}{dx} \right|_{t = \frac{\pi}{4}} = \frac{\sqrt{2}/2}{-\sqrt{2}/2} = -1$$

Ex 6

$$x = \sec(t) \quad y = \tan(t)$$

slope at $t = \frac{\pi}{4}$



$$\text{slope} = \sqrt{2}$$

pt $(\sqrt{2}, 1)$

$$\frac{dy}{dx} = \frac{\sec^2 t}{\sec t \tan t} = \frac{\sec t}{\tan t} = \frac{\sqrt{2}}{1}$$

eqn of
tan line: $y = \sqrt{2}(x - \sqrt{2}) + 1$ $t = \frac{\pi}{4}$